



the **ILLINOIS ENGINEER**

CHICAGO



Current progress of construction on University of Illinois Assembly Hall. The 100-foot temporary central tower will be removed when the dome has been poured, and another 30 feet of ground excavated from the center of the bowl.

THE ILLINOIS ENGINEER
OCTOBER, 1960
VOLUME XXXVI, NO. 10



Undergraduate Division
Navy Pier
Chicago 11, Ill.



P.F.T. at FLORA, ILLINOIS

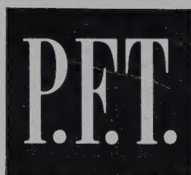
new U. S. center of population

From coast to coast America is growing. The progress of the past, the vitality of the present together with the social, economic and technological advancements have given us an assurance of a dramatic and expanding future.

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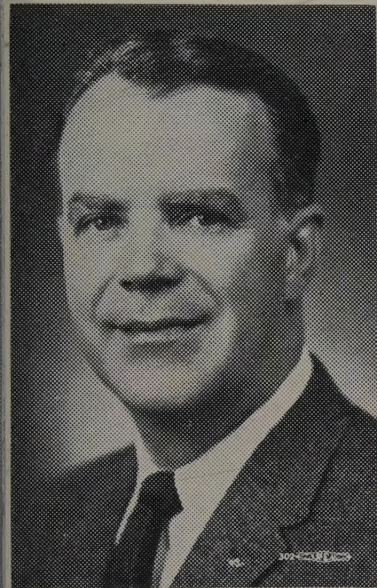
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AROUND THE STATE

By L. D. HUDSON, *President, ISPE*

As the fall activities swing along, the requests for discussions of professional expression, including "Unity" and "Management-Employee Relations", are gaining momentum. ISPE is gladly furnishing speakers to Founder Society groups and to others interested in the professional issues of the day. The demands for these show the popular concern for professional activity. They are also supporting and reinforcing our Society's program.



A shining IBM machine now stands in ISPE's Springfield headquarters office to speed the service coming to each new member. With the steady growth ahead, this unit will soon be repaying its way. Its presence also means that numerous new office practices will become SOP (standard operating procedures) as Robert Newbury, Executive Director, casts his eyes in the twenty-two Chapter directions.

The signals of membership actions are seen from the north to the south. Among the "wisps" are signs of intense interest. . . . Members of the Chicago Chapter Ethics and Practice Committee are preparing a local case for legal action. . . . The State Fees and Salaries Committee has updated several important salary studies and submitted them through the Society to the heads of State engineering groups. This data has been needed as the agencies initiated their budget preparations for the next biennium. . . . The Egyptian Chapter played host to the Executive Committee on October 1st in Carbondale. Scene of the committee meeting was the President's Conference Room at Southern Illinois University. . . . In the Peoria area, the Convention Committee launched its plans for the April 1961 Convention. . . . Contacts are now being made in Springfield to see if the Secretary of State will set aside a block of license plates for professional engineers. . . . In the immediate future, the many sessions to welcome newly registered and other young engineers are in process. The kick-off looks good! Don't forget, you're welcome to attend the Board of Direction Meeting to be held November 5, 1960 at the Orlando Hotel in Decatur.

GOVERNMENT IS YOUR BUSINESS

Patrick Henry's, "Give me liberty or give me death—" has never been more prophetic than it is today. The gravity of the many types of threats to our liberty has recently been brought home to us by the varied circus-like performances in the United Nations. Do not underestimate these performers! These are the ones who have sworn to eventually dominate the world, including your home and mine.

In this year of presidential election, we are being bombarded by a record outpouring of information and opinion from radio, television and the press. This is good—provided it is accompanied by our analytical ability to sift and weigh the facts—and recognize the grains of fact from the chaff of emotion and propaganda. Our new President will have to be exceptionally analytical and possess the ability to direct a successful counter-attack in the fields of propaganda, economics and military preparation. While I have no doubt that some of America's advertising account executives could sell colorful cellophane-wrapped mudballs, we as a nation have yet to sell American ideals—either by gimmicks or any other means.

"If liberty and equality, as is thought by some, are chiefly to be found in democracy, they will best be attained when all persons alike share in the government to the utmost."—Aristotle.

Seventy-five per cent of all engineers who have ever lived are living today. Many of these engineers have become so engrossed in immediate jobs and businesses that little time has been allotted for participation in politics and civic affairs. As American citizens, "we" are the government.

Mr. A. F. Jacobson, President of Northwestern Bell Telephone Company, recently stated:

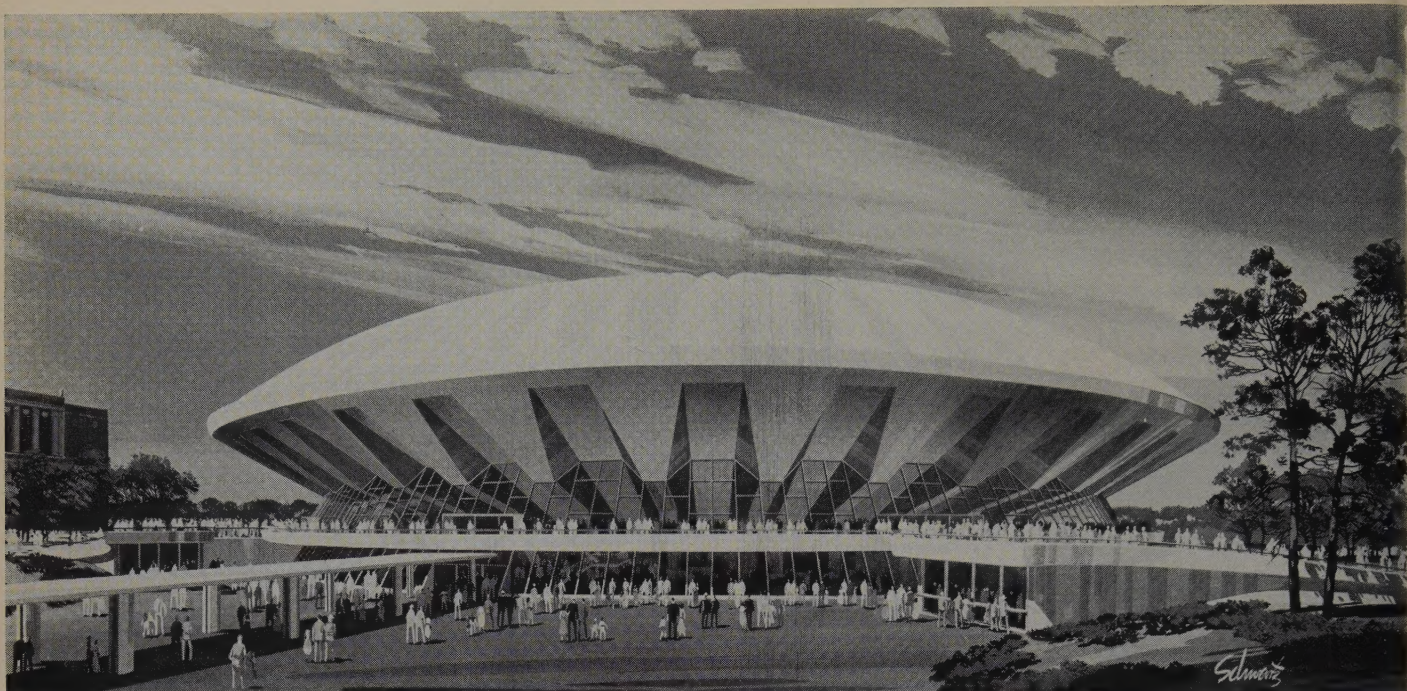
"As citizens of a free and democratic country we possess many precious individual rights which carry certain obligations. Preservation of these rights and their continued enjoyment require an understanding of their significance and the responsibilities they impose.

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UNIVERSITY OF ILLINOIS ASSEMBLY HALL



Artist's rendering of University of Illinois Assembly Hall as it will appear when completed. Memorial Stadium is at left.

Following is a special article for the ILLINOIS ENGINEER from the University of Illinois Public Information Office, prepared by Arthur R. Wildhagen, Assistant Director of Public Information, and Ralph J. Henneman, Electrical Engineer, U. of I. Arch. Office and Secretary-Treasurer of Champaign County Chapter:

Unique in concept, design, and construction is the University of Illinois Assembly Hall now being built at Urbana-Champaign. It will have the world's largest reinforced concrete roof without central supports.

The domed building, shaped much like two saucers one inverted over the other, will be 400 feet in diameter and rise 100 feet above surrounding terrain. Seating and central area will dip into the ground so that the dome will arch 130 feet above the floor inside.

The building will seat 16,500 for events such as basketball when the central floor area is clear. It will seat another thousand for events such as lectures or convocations when the floor space also can be occupied.

One-half of all permanent seats will be below ground level. This eliminates balconies and excessive climbing to any seat in the structure. With multiple exits around its circumference, the building will fill or empty in brief time.

It is planned for a multiplicity of uses—theater, ballet, symphony, convocations, commencements, conventions, sports. For theater and similar uses a stage will be placed in the central floor and curtaining arrangements close off an area of 4,000 cushioned seats planned for this purpose.

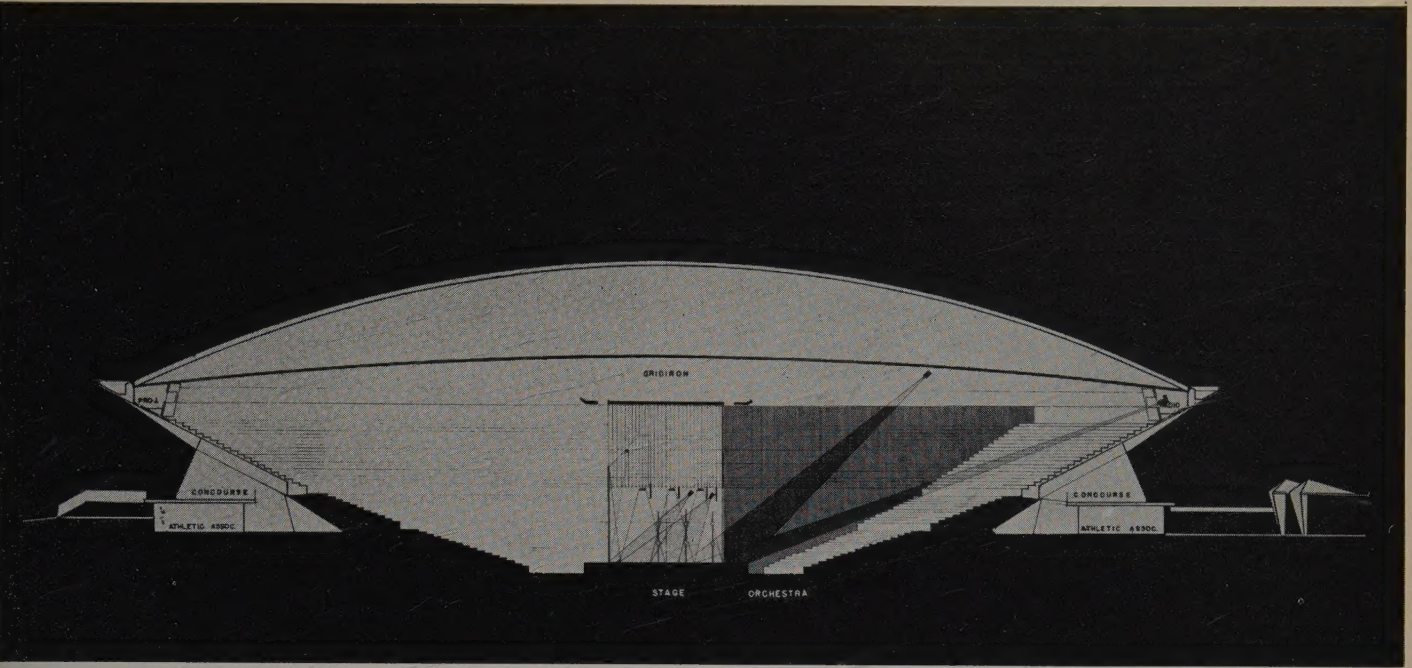
Circling the building at ground level will be a glass and steel enclosed concourse 30 feet wide, 1,100 feet in total length which also can be used as display space for events such as the Illinois State Junior Academy of Science meeting held annually on the Illinois campus.

The Assembly Hall is located just south of Memorial Stadium. These two immense and unusual buildings together will form a spectacular approach to the campus for persons coming from the south or west or passing on the nearby Illinois Central Railroad.

The building will utilize concrete, aluminum, glass, and steel. Built-in facilities will provide for television and radio broadcasting and for press coverage of events, and will even include a service elevator capable of bringing a truck or an elephant to the main floor if desired.

Cost of the building is \$7,500,000, to be repaid by income and fees. Construction started May 25, 1959. Completion has been estimated by Sept. 1, 1962.

Harrison & Abramovitz of New York are the architects. Siska & Hennesy of New York are the mechanical and electrical engineers. Ernest L. Stouffer is university architect.



Cross-section drawing shows how University of Illinois Assembly Hall will be used for theatrical events, with stage located on central floor and pie-shaped section of 4,000 cushioned seats curtained off from rest of structure. Drawing also shows seating arrangement, with half of all seats below concourse level and all easily accessible.

Contracting firm is Felmley-Dickerson Co. of Bloomington and Urbana, headed by Ray C. Dickerson, president, a member of the Champaign County Chapter, Illinois Society of Professional Engineers.

There is nothing in the world today like this building. Its construction is a structural engineering feat. The bowl portion of the structure is set half below ground level to reduce costs and increase accessibility.

It is supported on a continuous ring footing located 30 feet below grade and forming the foundation for 48 supporting buttresses. Between the buttress formations, light weight reinforced concrete construction will support the permanent seats.

During the first stage of building, ground within the bowl has not been excavated. A 100-foot temporary steel tower has been built here to support the center of the dome during construction.

Pouring will be in segments, with those opposite each other made at the same time to keep the structure balanced. Each dome segment will have a series of complex corrugations or folded plates, for both strength and accoustical purposes.

Light weight concrete is to be used for pouring these. Total mass of the roof will be such that outdoor traffic or even passing trains on the nearby railroad will not be heard.

A tension ring of 505 miles of 3/16-inch hard drawn steel wire will circle the dome, containing the horizontal stresses and transferring all forces to the buttresses below.

A 10-inch I-beam will be installed around circumference of the dome to mount and operate a winding machine weighing approximately 10 tons. The wire will be stressed to 120,000 pounds per square inch during the winding operation.

Winding 505 miles of wire around the dome will take six continuous weeks, and must be accomplished when the temperature is not lower than 40 degrees with variations not greater than 15 degrees.

The tension ring will have a total cross sectional area of 85 square inches and be entirely encased in "Gunitite" concrete on completion. During the process of tensioning the ring, the center of the dome will be raised 3 inches above the forms on which the sections have been cast.

This will allow more efficient disassembly of the forms and the 100-foot tower, after which some 35 feet of earth inside the structure will be excavated and the bowl and seating completed.

Electrical service facilities will be served by three dry-type transformer vaults with total capacity of 3,000 kva. Dual secondary voltages of 120/208 volts, 3 phase, 4 wire, wye will be used for general lighting, and 440 volts, 3 phase, 3 wire delta for power distribution.

Overhead illumination will be supported from a steel grid or service catwalk system 85 feet above the finished floor, and include many different types of fixtures as required for the various uses of this unique building.

(Continued on Page 6)

N.S.P.E.-OPPOSED FEDERAL P. E. REGISTRATION ACT DIES IN HOUSE CIVIL SERVICE COMMITTEE

A bill proposing a system of Federal registration for professional engineers, in order to regulate the practice of engineering on Federal projects, received no consideration from the Civil Service Committee, and died with adjournment. *NSPE had gone on record as being opposed to the measure* because it would seriously weaken and curtail the effectiveness of state registration laws. The Society opposed the bill also because it would have permitted registration without examination of some persons with questionable qualifications, was vague in its ultimate application, and provided a definition of "practice of engineering" which was excessively generalized and loose when compared to the customary definitions in existing state laws.

The measure was introduced "by request" by Rep. John R. Foley of Maryland. It provided for the creation of a Federal Board of Registration for Federal Professional Engineers to license all persons engaged in the practice of engineering on Federal projects. Both governmental and nongovernmental engineers would have come under the bill's provisions.

I.U.E. BACKS DOWN ON BID FOR PROFESSIONALS IN CHRYSLER-AIRTEMP VOTE

Discord, Division, Hostility Seen Inherent in Unionism

In an all day conference with the Chrysler-Airtemp management and local NLRB officials in Dayton, Ohio, representatives of the International Union of Electrical Workers have withdrawn a petition to include 38 professional employees in a unit to vote on representation September 14th.

The voting unit, agreed to by both parties, includes about 250 clerical employees and 125 technicians.

Prior to the conference, a series of IUE letters to salaried employees had drawn a reply from NSPE Executive Director Paul H. Robbins, in which he refuted union statements that unionization of engineers is consistent with the Canons of Ethics, the Engineers' Creed and the Rules of Professional Conduct.

In its letters, the union had promised technicians that they would be "auto-

matically" upgraded to engineering status, regardless of qualifications, and had quoted Section 21 of the Canons of Ethics as proof that NSPE and the union "agreed" that unionization is ethically acceptable for the professional engineer. Section 21 states:

"He will uphold the principle of appropriate and adequate compensation for those engaged in engineering work, including those in subordinate capacities, and being in the public interest and maintaining the standards of the profession."

In his reply, Robbins pointed out that the union statement had quoted Section 21 out of context and had

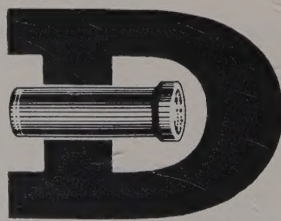
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ignored Section 8 of the Canons which says: "The engineer will act in professional matters for each client or employer as a faithful agent or trustee."

"This philosophy," concluded Robbins, "is hardly consistent with the demonstrated union approach to the problems of the engineer where an atmosphere of discord, division and hostility is usually present between the engineer and management."

I.U.E., TEAMSTERS LAUNCH WHITE COLLAR DRIVES

I.U.E. Fights Production Union Label

In the face of increasing automation and decreasing percentages of production workers, the International Union of Electrical Workers (AFL-CIO) and the International Brotherhood of Teamsters have both put into action programs aimed at making unions and collective bargaining more attractive to white collar and professional employees.

IUE District's Four new Engineering Council has embarked on a drive to squelch charges that a production union cannot properly look out for the interests of professional employees. To date the activities of the Council have included the following:

Stress Professional Activities

Publication of two Professional Engineering License Review textbooks by Al Krause, member of IUE's controversial new Sperry local, to help engineers prepare for New York and New Jersey P. E. examinations. The Council is considering publication of similar volumes following these first two.

A series of technical seminars, featuring "top flight specialists," to be held for members this fall.

Organization of a technical education committee to coordinate training courses now sponsored by individual locals. The locals at Sperry and Arma have in the past undertaken programs which will now become available to other members of the Council. In addition to various specialized classes, both locals hold review courses for the New York exam.

Teamster "Invitation" to White Collar Workers

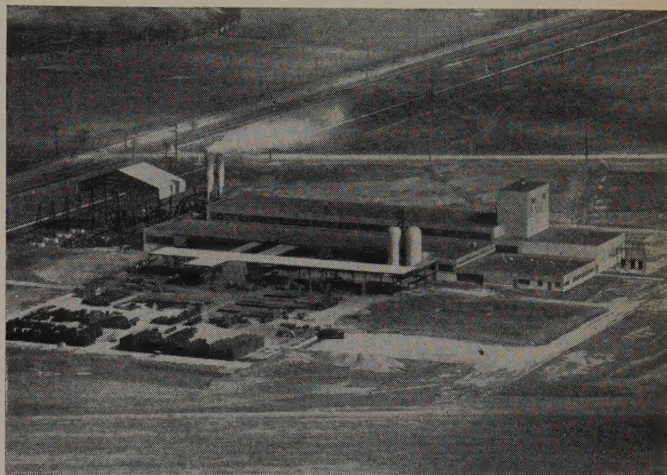
Aiming their drive at office workers, the Eastern Conference of Teamsters has issued a gold-and-white "invitation" calling for organization and Teamster affiliation as "the dignified, intelligent and only way to meet the employer on equal terms."

The Teamster "invitation" attempts to equate union representation and membership with professional society functions, stating that "Everyone recognizes that in organization there is strength. Engineers, lawyers, doctors, architects—in fact almost all industrial and professional groups in our American society—as well as employers are organized in mutual benefit associations designed to promote and protect their particular financial and self-interests."

Drive to be Limited

The Teamsters made it clear, however, that only the offices of already Teamster-organized companies would be subject to the new drive.

FIRST FOUNDRY OF ITS KIND



Neenah Foundry Company's plant #2, Neenah, Wisconsin, pictured above, is probably the only foundry ever built specifically for the production of gray iron and ductile iron construction castings, according to E. W. Aylward, president. In operation since June 1, the new foundry raises Neenah's total production capacity to an impressive 500 tons daily, making it one of the nation's largest independent foundries.

N.U.'S DEAN GOTAAS NAMED TO SCIENCE FOUNDATION COMMITTEE

Harold B. Gotaas, dean of Northwestern University's Technological Institute, has been named to the engineering sciences committee of the National Science Foundation, Director Alan T. Waterman has announced.

During the three-year appointment, Gotaas will advise this federal science-supporting agency on research in the engineering sciences. The N.S.F. last year made 1,809 grants worth \$49 million for basic research in the medical, biological and physical (including engineering) sciences.

Dr. Gotaas is recognized widely for his research in the field of sanitary engineering and environmental control. In 1958 he received two awards from the American Society of Civil Engineers—an unprecedented event—for the paper "Photosynthesis in Sewage Treatment," written with Dr. William J. Oswald and published in the *ASCE Transactions*. He received other awards for research while professor and chairman of civil engineering at the University of California, prior to his coming to Northwestern in 1956.

Gotaas' four-year term on the National health advisory council of the U. S. Public Health Service recently expired.

Gotaas resides at 618 Colfax, Evanston.

CHICAGO GETS COOPERATIVE EFFORT ON TELEPHONE DIRECTORY LISTINGS

Louis A. Bacon, Chairman of the Chicago Chapter Ethics and Practice Committee, reports that his committee has met with the Department of Registration and Education several times in the past month. They were joined in one meeting by the Structural Engineering Examining Board and at another time by two representatives each from ASCE, ASME, and AIEE.

As a result of these meetings, the Department has sent letters to all unregistered individuals or firms listed in the classified telephone directory under the following categories: Civil Engineers, Consulting Engineers, Electrical Engineers, Mechanical Engineers and Structural Engineers. The Department was able to have Donnelley hold up the printing of the new directory (in these categories) until September 29th. In the letter to these unregistered firms, the Department has instructed them to prove that they are properly registered or to withdraw their listing immediately.

It was further agreed at these meetings, that after the new directory is published, representatives of our society in all parts of the state should send their directory to the Department so that they can canvass them for unregistered listees in the above-mentioned categories.

Louis Bacon and Howard Depree, Legal Counsel for the Committee, attended an informal hearing between Mr. Thomas O. Miles, Jr., and the Cook County State's Attorney's office. Special meetings of the Salt Creek Chapter Ethics and Practice Committee and the Chicago Chapter Ethics and Practice Committee were held to consider items brought out in this hearing. More will be forthcoming on this case in the next issue.

The Salt Creek and Chicago Chapters have received \$200 from the ISPE State Board to add to the already budgeted amounts to defray legal costs on the Thomas O. Miles, Jr., case. With the limited amount budgeted by the State Board for legal fees, the committees are indeed appreciative of this fine support. The two chapters have pledged not to use this money until their budgeted amounts have been exhausted.

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Continental Casualty Company of Chicago
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(Continued from Page 3)

A sound system has been specially designed to handle theatrical productions, public addresses, assemblies, musicals, and sporting events. Facilities for originating radio and television broadcasts include both observation booths and a small studio; with transmission over university or commercial channels.

Mechanical heating and ventilating systems will be of low velocity air distribution type. Supply fans will be located in equipment rooms on north and south sides of the building. At present air conditioning will not be installed for the auditorium. Offices and public rooms to be located on a level beneath the concourse will have hot water radiation on exterior walls.

SOME STATISTICS ABOUT THE UNIVERSITY OF ILLINOIS ASSEMBLY HALL

Area of building site—38 acres
Site excavation—160,000 cubic yards
Building excavation—60,000 cubic yards
Forms—820,000 square feet (including 192,000 square feet in dome)
Lumber for forms—800,000 board measure
Steel for forms—220 tons
Regular concrete—14,000 cubic yards
Lightweight concrete—6,700 cubic yards
Reinforcing steel—2,150 tons
Post-tensioning wire—373,400 pounds (505 miles of 3/16-inch wire)

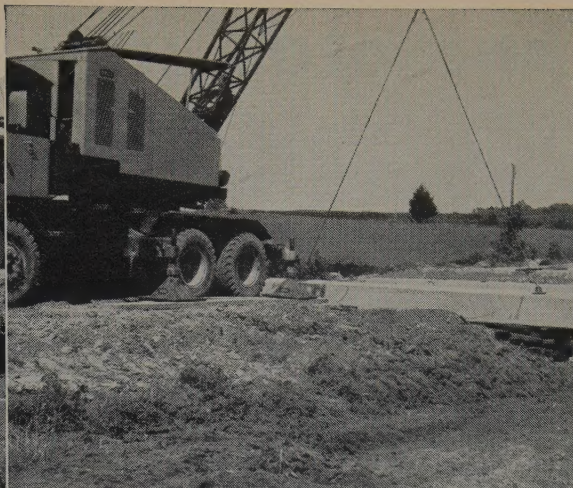
NATIONAL CONFERENCE ON INDUSTRIAL HYDRAULICS, CHICAGO, OCTOBER 20-21

The 16th annual National Conference on Industrial Hydraulics, sponsored by Illinois Institute of Technology, was held at the Hotel Sherman, Chicago, on October 20 and 21.

Purpose of the NCIH is to advance the general level of technical knowledge in the hydraulics field. It is held in cooperation with a number of engineering societies and the hydraulics industry.

"What of the '60's?" was the topic presented by the main speaker, Dean Curtis L. Wilson, Missouri School of Mines and Metallurgy, Rolla, Mo. Dean Wilson spoke during the all-society banquet, which was held on the first evening of the conference. Toastmaster at the banquet was Dr H. A. Leedy, director of Armour Research Foundation.

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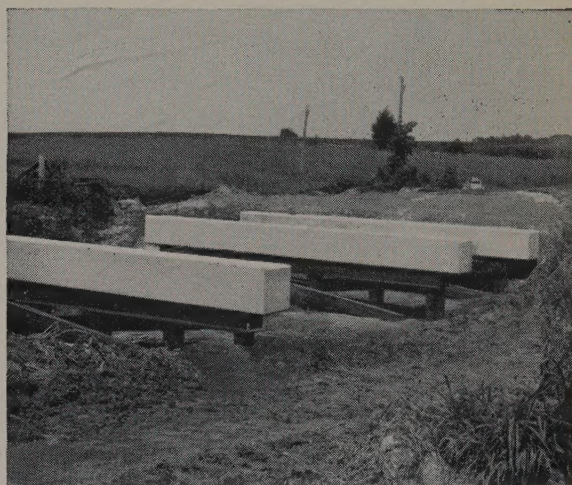
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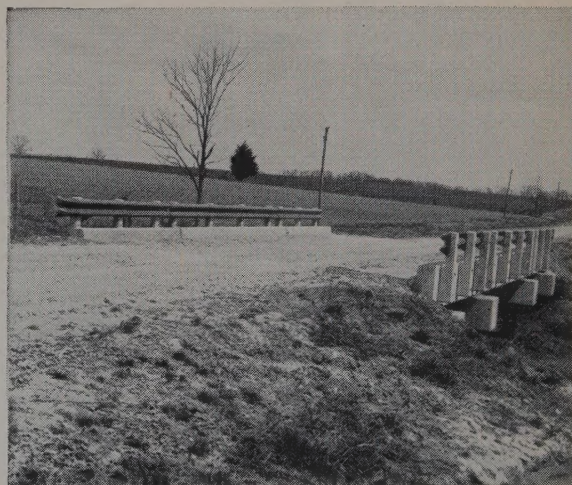
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Minnesota's Iron Ore Industry Fights Back

(REPRINTED THROUGH THE COURTESY OF
SID DEVIN, EDITOR, MINNESOTA ENGINEER)

Some 700 million years ago, soluble iron and silica settled out of a shrinking primeval sea that at one time covered a vast area of what is now Minnesota, Wisconsin and Michigan. This soluble iron and silica had leached out of decomposing, iron-rich volcanic rock, estimated to be perhaps 2 billion years old. Followed eons of geologic time in which mountains were built, volcanoes were active, and solid land emerged from the sea.

Iron Ore Calendar

The elements of the atmosphere, wind and rain with the resulting streams, then went to work eroding the land for perhaps as many years as there are thousand dollar bills in the national debt*. Perhaps half a billion years after the depositing of the iron and silica out of the sea came the glacial advance, and then the retreat of the ice, leaving the land blanketed by an overburden of clay and sand and gravel.

Against the backdrop of this cosmic calendar man's activity in the iron ranges of northern Minnesota spans but a tick of the geologic clock. Iron ore was first discovered in Minnesota about 110 years ago—about 1850. Seventy-six years ago the first Minnesota ore was shipped from the Soudan mine in 1884. The first Mesabi ore was shipped in 1892 from Iron Mountain; the first ore from the Cayuna range was shipped in 1911.

What is the significance of Minnesota's iron ore industry to, first, America; secondly, what is its significance to Minnesota?

Nine out of ten pounds of metal we use is steel—made from iron. For every ton of iron produced—and America's steel-making capacity is over 148 million tons a year

—from a little over 1 to as much as $2\frac{1}{4}$ tons of new iron ore is fed into the iron-making furnaces. The greatest portion of these ores—despite the increasing importance of foreign ores—comes from the iron ranges of northern Minnesota, the Vermillion, the Cayuna, and the greatest of them all, the Mesabi. In a good year these three ranges will ship over 60 million tons of iron ore and has reached 80 million tons.

Economic Mainstay

What does the iron ore industry mean to Minnesota? Take away the iron ore industry and northern Minnesota today would be an economic backwater. Something over 20,000 Minnesotans are directly employed in the industry. In the mining communities there are an additional 2 wage earners for every man working in the iron mines, engaged in transportation, trade, construction, education, government and all the service and other activities essential to economic life. These three wage earners combined support four dependents.

With a direct payroll of well over \$100,000,000 per year; with tax contributions of a magnitude and importance that is a subject in itself; perhaps the best way to grasp the impact of the industry on the welfare of the state is to look at the "Trust Funds."

Today the trust funds of the commonwealth of Minnesota are approaching a total of nearly a quarter billion dollars, second among all the states of the union. The principal element in this great public accumulation has been the royalties and income from iron ore—and the income from this trust fund is earmarked for education.

Since its inception, Minnesota's iron ore industry has had to battle and overcome problems without end. Mining engineers, metallurgists, engineers specializing in construction, transportation and materials handling, mechanical engineers and others have met and surmounted problem after problem relating to the physical and technical problems of mining, preparing and transporting the ore. But there is another set of problems—more complex and more difficult.

World Demand Dictates

These problems were succinctly phrased by L. A. Rossman, one-time publisher of the Herald-Review at Grand Rapids, Minnesota:

"The iron mining industry is a vast enterprise which is greatly influenced by elements beyond the control of those who mine and transport iron ore. The progress and vicissitudes of steel control the demand for iron ore. Within the last quarter century the shipments of iron ore from Minnesota have varied from a low of less than three million tons to a high of eighty million. The future of the iron mining industry of Minnesota depends not only upon reserves of mining and metallurgy, but upon those factors in America, and throughout the world, which depress or stimulate the demands for steel and iron ore."

There are two basic challenges facing Minnesota's iron ore industry that are *economic* and not *technical* in nature—yet perhaps fundamentally more important to engineers in the industry—and in the area—than are the technical problems. These two challenges are:

*The national debt is about the equivalent of 285 million one-thousand dollar bills—and what better current index of comparison is available to convey a feeling of the astronomical figures involved?

Firstly, the direct competition of foreign ores, chiefly high grade ores from the Laborador, Venezuela and Liberia.

Secondly, the indirect competition of foreign iron and steel products that are threatening the market of the domestic steel mill users of Minnesota ore—competition that puts European wire products on the dock at Duluth cheaper than the Duluth plant of the American Steel & Wire Division of U. S. Steel can turn them out right on the scene!

Two Approaches

In meeting these challenges there are two approaches: The first approach is the "high road" of increasing productivity, a productivity in the best American tradition based upon increased efficiency of labor made possible by increased capital investment in better plants and equipment; and, upon improved methods and techniques arising out of engineering research and know-how. The classic example of this approach, as applied to the



Since Minnesota's first ore concentration plant became operational in 1907 at Oliver's Trout Lake site, some 80 beneficiation plants have been constructed—creating northern Minnesota landscapes as pictured above.

iron ore industry, is the entire story of "ore beneficiation," including, but not exclusively so, the development of taconite—a development that seems to be handling nicely the inevitable depletion of the high grade ore deposits.

The second approach to coping with these economic problems is the "low road" of demands for tariffs, restrictive quotas, and other means of applying governmental powers to achieve economic aims. It is to the credit of the iron ore industry that its responsible spokesmen have taken the long-run, statesman-like view, and appear to be following the "high road." The iron ore industry is committed to "helping itself." Its basic contentions in legislative and governmental areas have revolved chiefly around the effect of taxation on the industry's competitive position. However, this subject is not, at the moment, our primary concern—certainly not in an election year!

Strike and Slump

One of the unfortunate circumstances compounding the competitive problem of the iron ore industry was the prolonged steel strike of last year—which gave tremendous impetus to the influx of both iron ore and iron and steel products from abroad. It appears that at



Where it starts: Electric shovel loads iron ore at Plummer mine of Oliver Iron Mining Division, near Taconite, Minn. Trucks carry the ore to a screening pocket from which it is transported by belt conveyor to a surge bin and then to the washing plant for beneficiation prior to shipment.



Heavily laden with nearly 20,000 tons of ore, the Steamer Arthur M. Anderson, one of the 57 ships of U. S. Steel's Pittsburgh Steamship Division, almost ready to pull away from the loading docks at the Head-of-the-Lakes.

least some portion of the domestic market for both iron ore and finished products has been captured for some time to come, and perhaps permanently, by non-domestic suppliers. Competition has gotten pretty rough.

Another unfortunate circumstance is the current steel industry slump that has seen production fall to about 50% of capacity. The optimistic estimates of the beginning of the year have been revised, and then revised again—downward. At midsummer, 1960, the Pittsburgh Steamship division of U. S. Steel had laid up 13 of its 57 ore carriers—though there is some solace in the fact they were pretty much the smaller and less efficient tonnage carriers.

Last year Minnesota tax revenues from shipments of iron ore were about \$12 million—as against an anticipated \$28 million. This year Minnesota Commissioner of Taxation Joseph M. Robertson believes the iron ore taxes may generate perhaps \$24 or \$25 million.

Optimistic Indications

Having applied the somber hues to the overall picture, nevertheless there is much optimism in the Min-

nesota iron ore scene. Certainly this is true if we judge by the actions and plans of industry leaders. Let's cite a few indications.

The Duluth, Mesabi and Iron Range Railway Company has started construction on an iron ore thawing plant which will utilize infra red rays. The plant, at Two Harbors, may already be completed. Railroad officials say that one man can operate the entire plant through an elaborate automation system.

The M. A. Hanna Company of Cleveland is undertaking construction of a \$2 million semi-taconite pilot plant this spring to test the possibilities of producing iron ore concentrates from semi-taconite (the non-magnetic variety of low-grade ore). The plant, with a capacity of 10-tons per hour will be in the vicinity of the Hanna mines in the Nashwauk-Cooley area in Itasca County and should be in operation this fall.

The Oliver Mining Division of U. S. Steel, also has begun construction on a pilot plant to process semi-taconite iron ore concentrates. The facility, with a 5-ton per hour capacity, near Coleraine

at Oliver's Trout Lake ore concentration plant, will provide information regarding the commercial possibilities of billions of tons of semi-taconite in the Western Mesabi range now rated very low for suitability as an iron base. The plant will use a magnetizing roasting process, with a rotary kiln as the basic equipment.

Canadian Firm Plans

Premium Iron Ores, Ltd., of Montreal, is considering building a multi-million dollar plant at either Duluth or Fort William-Port Arthur, Canada. The proposed plant will utilize a direct reduction processing, by-passing blast furnaces. One of the biggest drawing cards in Duluth's favor is the lower priced natural gas which can be supplied by the Northern Natural Gas Co., a big midwest distributor which recently completed a 130-mile pipeline extension into Duluth.

Mesabi Iron Company and Reserve Mining Company have arrived at an agreement settling an eight-year dispute over profits from Reserve's taconite plant at Silver Bay. This agreement has paved the way for an expansion of capacity of Reserve from its present 6 million ton per year capacity to more than 9 million in the near future and beyond perhaps to 12 million. Construction, to total \$120 million in value, has already begun. Reserve, jointly owned by Republic Steel and Armco Steel, was one of the two pioneer taconite plants in Minnesota—the other being that of Erie Mining Company at Hoyt Lakes.

Ore Boats

To climax the optimistic phase of our report, in the very story by Leonard Inskip, Minneapolis Tribune Business Editor, reporting on the reduction of ore production estimates by the State iron mines, was carried a photograph of the 730-foot long Edward L. Ryerson,

newest and largest ore boat on the Great Lakes, en route to its maiden voyage. This at the very time 13 other ore boats were being laid up!

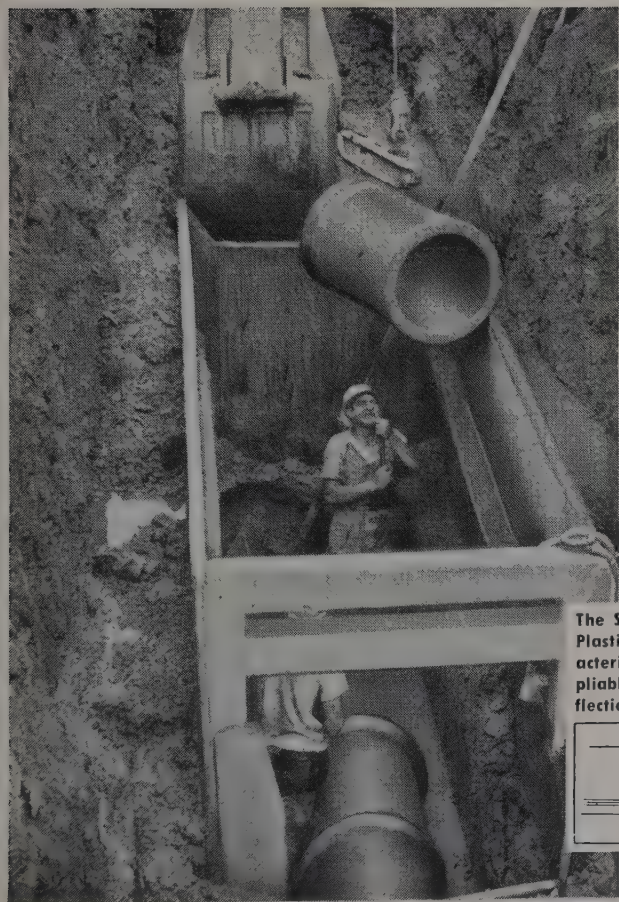
We may summarize this report on the present status of Minnesota's iron ore industry by this conclusion: There is a somber side to the current outlook involving chiefly the immense impact of foreign competition in both iron ore and in finished iron and steel products; there is also a rosier hue in the plans and actions of the iron ore industry in tremendous investment commitments that bespeak a faith in the long-run outlook that current adverse features have not daunted.

(Credit: To Dreng Bjornarra of U. S. Steel Company's St. Paul office for invaluable background information.)



Jack Zupetz, an Oliver Iron Mining Division engineer, works on a scale model of the new 1,500,000-ton Sherman Concentrator being built near Chisholm to improve natural ores of low grade in the Monroe and Sherman group of mines.

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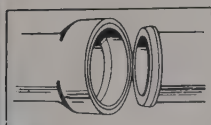
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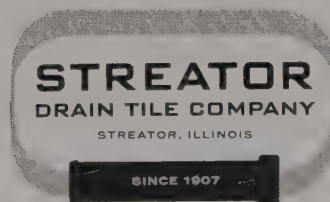
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I.I.T. GRADS RECEIVE NEW HIGH IN STARTING SALARIES

June graduates at the Illinois Institute of Technology received the highest starting salaries ever paid by business and industry to I.I.T. alumni, according to a recent report issued by Illinois Tech's placement center.

Average salaries of \$6,200 annually were paid to the engineers who received their bachelor's degrees. Graduates of I.I.T.'s business and economics department received average starting salaries of \$5,520.

These figures are a 4 per cent increase over those for 1959 graduates.

According to placement director Earl C. Kubicek, the I.I.T. center placed about 78 per cent of its graduates. The remaining 22 per cent entered graduate school or the armed forces or found their own employment.

(Continued from Page 1)

A general lack of interest in governmental affairs, failure to exercise citizenship privileges and failure to assume our individual share of responsibility for the success of our democracy can only weaken it and threaten loss of liberty and freedom.

"We Americans face many serious problems both at home and abroad. These require good judgment and decision at all levels of government—national, state, local. Success in meeting these important problems in a nation such as ours makes it necessary that the individual assume responsibility for public and governmental affairs and have the knowledge necessary for sound judgment and action."

American engineers are fortunate in that their training is better than average, their education is better than average, and their incomes are better than average. We engineers, therefore, have a greater stake than many and greater capacity than many to influence our government in the direction of sound principles.

Before and during elections let us participate. Elementary is registration to vote—yet more than a third of potential voters shamefully fail to take even this step. Get active in the party of your choice; assist it on the precinct level. Contribute to it financially and above all—speak up. Regardless of which presidential candidate emerges the victor, American democracy will be stronger because of *your* participation in the process.

After elections do not ignore government—either as an individual or as a member of your professional society. As engineers we can't help but have some specialized knowledge that can be helpful.

America's people are her final legions of liberty. Her professional engineers can emerge as one of the strongest battalions through their technological and civic accomplishments. Government is your business!

HIGH SCHOOL STUDENTS TO SEE ENGINEERING WORK

Sixty-seven high school students from the Bloomington Area spent their October 10th holiday studying the work of Professional Engineers at first hand. Small groups visited the Engineering Department of one of several local organizations to see what engineering work is really like.

Participating high schools were Bloomington H. S. with 21 students; Normal Community H. S. with 21; Trinity H. S. with 15; U. High with 10. Participating organization were: Bloomington City Engineer's Office; Farnsworth & Wylie; General Electric Co.; General Telephone Co. of Illinois; Gulf, Mobile & Ohio Railroad; W. L. Wroan Co.

The program was under the direction of Robert J. Dennis, Chairman of the Education Committee, Bloomington Area Chapter, Illinois Society of Professional Engineers. The purpose is to get qualified high school students interested in Engineering careers. Mr. Dennis says: "We are hopeful that some qualified students who are either totally unaware of the work of a Professional Engineer or students who may be 'on the fence' as to choosing careers will be in a better position to judge for themselves if they would like to become a Professional Engineer. We feel that 'one picture is worth a thousand words' so to speak, in helping them make this decision. Therefore, we have proposed this visit to let them see what the work of a P. E. is really like.

"We fully realize that this visit may also burst some 'romantic' idea bubbles that some students may have about engineering work, but we feel that the student should know of the bitter as well as the sweet when making a career decision."

Another effect of this visit could be to alert prospective engineering students to the courses that they must study in high school if they are to enter an engineering school. According to Mr. Dennis, high school advisors in this area know these requirements and can direct their students to the necessary studies.

The Illinois Society of Professional Engineers is devoted to the advancement of the public welfare and the Engineering Profession. President of the Bloomington Area Chapter is Lee Rhodes, a P. E. with General Electric Co. Chairman Dennis is a P. E. with the General Telephone Co. of Illinois.

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EXECUTIVE COMMITTEE MEETS ON S. I. U. CAMPUS

Members of the I.S.P.E. Executive Committee enjoyed the beautiful scenery of southern Illinois and the hospitality of members of Egyptian Chapter, who arranged for facilities of Southern Illinois University for a meeting on October 1.

Following the business session and a delicious lunch, the group toured the University campus under the expert guidance of Egyptian Chapter members.



Front row, l. to r.: Manuel Garcia, H. F. Sommerschild, Peter D. Anderson, Ralph Gallington, R. D. Collins, George Glenn, Ray Frankenberg. Middle row, l. to r., John E. Housiaux, C. Dale Greffe, Joseph Kirsch, Robert Gates, L. D. Hudson, Fred Persson. Back row, l. to r., W. A. Howe, Maurice Webb.

A summary of the Executive Committee proceedings follows: President Hudson reported that, after working with the Fees and Salaries Committee, he had sent letters to all State governmental agencies employing engineers in which a recommended salary schedule of the American Association of State Highway Officials and a listing of the median income from the NSPE Survey (both projected by the All Items Index of the U. S. Department of Labor to 1/1/61) was asked to be considered in setting up their budgets.

Vice President Sommerschild reviewed his and Functional Sections' Chairman Roland Olson's efforts in supporting a motion that the NSPE Regional meeting go on record as opposing going any further with a recommendation of the American Road Builders Association's setting up an accreditation program for consulting engineering firms to do highway work. The proposal was that there would be a six-man Board, composed of one from six different Societies (some of which do not require registration for membership) who would determine accreditation in seven branches.

N. U. NAMES ASSISTANT DEAN

William T. Brazelton, associate professor of chemical engineering, has been named assistant dean for undergraduate administration at the Technological Institute of Northwestern University. He was appointed by Harold B. Gotaas, Institute dean.

In his new post, Brazelton will handle curriculum matters and serve as advisor to upperclassmen. With research and the graduate program expanding at Northwestern, he also will be responsible for seeing that the undergraduate interests continue to receive equal attention.

Dr. Brazelton, 39, is a veteran of the 20-year-old Technological Institute, having been on the Northwestern campus since his junior year in college. He was a member of the first graduating class of the Institute (1943), and also received the master's and doctorate there, all in chemical engineering. He became a faculty member in 1947 and was named associate professor in 1954.

Brazelton, his wife Marilyn and two children live at 10 East Willow road, Prospect Heights.

The Aimeco-NSPE Scholarship program was discussed. All members of the Education Committee are to be sent copies of the data on this program.

Secretary Housiaux reviewed the apparent need for a definite outline of a working procedure for chapter representatives to bring matters before the Board. The following motion, made by Housiaux and seconded by Collins, was carried and will be presented to the Board of Direction at its November 5 meeting:

1. Chapter Representatives' reports should be limited to the transfer and exchange of ideas and information relating to chapter operations.
2. The ISPE office will call for agenda items 15 days before a Board meeting, to be submitted not later than ten days before the meeting. These items will be placed on the agenda.
3. Any urgent items a chapter wishes to bring to the Board may be presented under new business.

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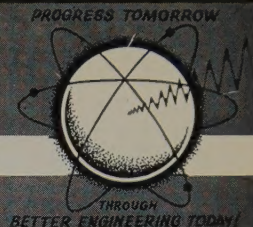
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The Illinois Society of Professional Engineers is not responsible for statements made or opinions expressed in this publication.

Second-Class postage paid at Springfield, Illinois.

Subscription rates are \$2.00 per year in advance to members of the Illinois Society of Professional Engineers; \$4.00 per year in advance to non-members in U.S.A. and its possessions, Canada, and Mexico. Foreign \$6.00. Single copies 40c. Special issues \$1.00.

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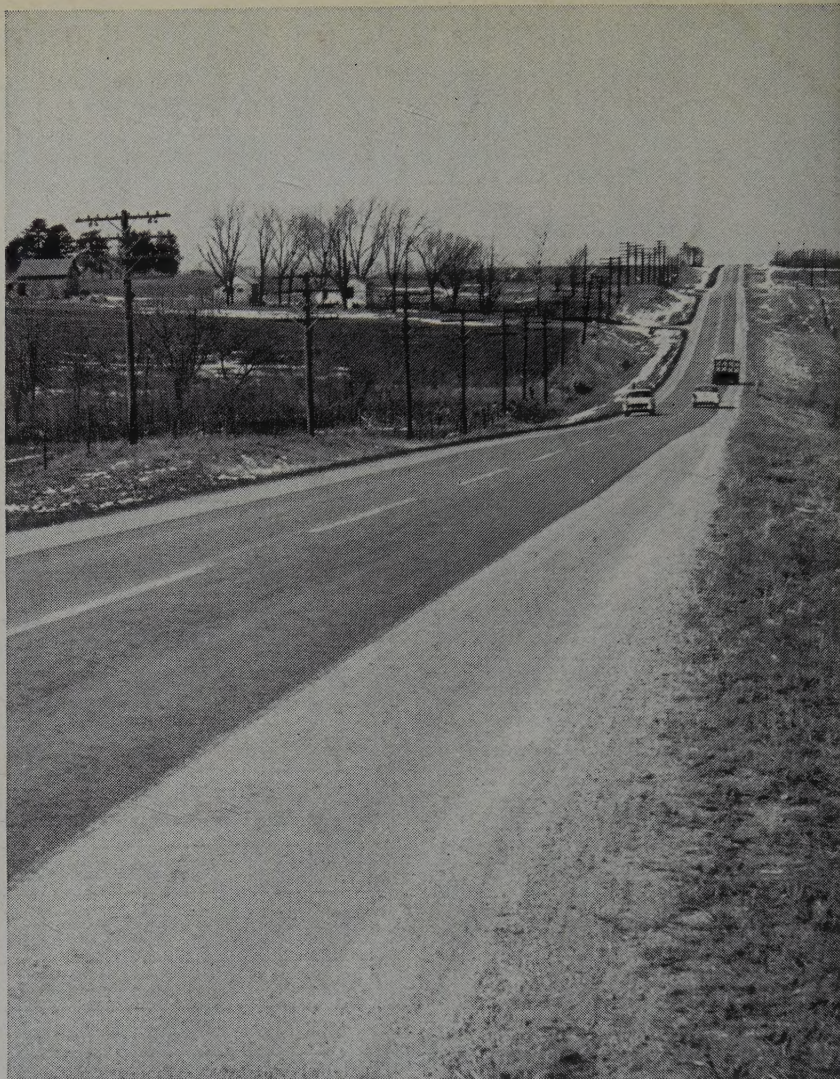
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